Math 1A03 Calculus 1 Section C01 Dr. Wolkowicz

Dr. Wolkowicz's website: ms.mcmaster.ca/wolkowic/

Dr. Wolkowicz's e-mail: wolkowic@mcmaster.ca

Dr. Wolkowicz's office hours: HH/318
Wednesdays 11:00-12:00 & Fridays 2:00-3:00 or by appointment

Course website: www.childsmath.ca/childsa/forms/main_login.php

My lecture notes will be posted after classes.

There are links to my notes from my website, as well as from the course website -> Course Information (on the left see Dr. Wolkowicz's Notes)

There is also lots of important information, including links to Announcements, Important Dates, Lecture Schedule, MSAF FAQ, Suggested Problems etc.

childsmath

Login Page

McMaster University

Mathematics and Statistics

$$\int_M d\omega = \int_{\partial M} \omega$$

MacID Login

(Same as Avenue/Mosaic)

Need help with your MAC ID?

MAC ID FAQs

childsmath
Student Admin Page
user: wolkowic

McMaster University

Mathematics and Statistics

$$\int_M d\omega = \int_{\partial M} \omega$$

Open Resources:
Pre-Calc Review
Calculus Warm-Up

Your Courses:
Math 1A03/1ZA3
More Courses...

Math 1A03/1ZA3

Course Information

Announcements

- Tutorials start on Monday September 9th
- To get started you should do Assignment #0 and start on Assignment #1
- ... more announcements

Assignment #0 (Due date: 11:59pm on Friday September 13)
Assignment #1 (Due date: 11:59pm on Friday September 13)
Assignment #2 (Due date: 11:59pm on Friday September 20)
Assignment #3
Assignment #4
Assignment #5
Assignment #6
Assignment #7
Assignment #8
Assignment #9
Assignment #10

Math 1A03/1ZA3 Marks

childsmath

Math 1A03/1ZA3

Course Information

McMaster University

Mathematics and Statistics

$$\int_M d\omega = \int_{\partial M} \omega$$

« Back to Admin Page

Announcements

Next Previous

- Tutorials start on Monday September 9th
- To get started you should do Assignment #0 and start on Assignment #1
- The Math Help Centre opens on Wednesday September 11th
- Here is a link to the Mathematics Review Manual, which is also available at the bookstore
- The **ONLY** calculator allowed on the tests or exam is the Casio FX-991 MS or MS Plus. **No other version of the Casio FX-991 is allowed.**
- Notetakers are needed for this course. Here is more information. And here is even more information.
- Times and locations of lectures and tutorials can be found in Mosaic.
- Please don't contact your professor about anything MSAF-related, unless you have first read this MSAF FAQ in its entirety. Then you should only contact your professor if the MSAF FAQ says that you should.

n

childsmath

Math 1A03/1ZA3

Course Information

McMaster University

Mathematics and Statistics

$$\int_M d\omega = \int_{\partial M} \omega$$

« Back to Admin Page

Course Outline

Next Previous

Course Home Page

- The course home page is NOT on Avenue to Learn. It is on childsmath.

Course Description

- **Course Title:** Math 1A03/1ZA3 - Calculus for the Physical Sciences I/Engineering Mathematics I
- **Class Times and Locations:** Check Mosaic

Instructor Information

Math 1A03 Section 1 (C01) Instructor Information

- **Name:** Gail Wolkowicz
- **Email:** wolkowic@mcmaster.ca
- **Office Location:** HH/318
- **Office Hours:** Wednesday 11:00am-12:00noon and Friday 2:00pm-3:00pm

Math 1A03 Section 2 (C02) Instructor Information

- **Name:** Jeremy Lane

Content
Scantron Instructions

Content Groups
Problem Samplers
Last Year's Tests

- **Email:** tba@mcmaster.ca
- **Office Location:** HH/407
- **Office Hours:** Wednesday 4:00pm-6:00pm

Math 1ZA3 Section 2 (C01) Instructor Information

- **Name:** Chris McLean
- **Email:** mcleac3@math.mcmaster.ca
- **Office Location:** BSB Basement, B124
- **Office Hours:** TBA

Math 1ZA3 Section 3 (C02) Instructor Information

- **Name:** Aaron Childs
- **Email:** childsa@mcmaster.ca
- **Office Location:** HH/213
- **Office Hours:** Click here

Math 1ZA3 Section 1 (C03) Instructor Information

- **Name:** Cheng Yang
- **Email:** yangc74@math.mcmaster.ca
- **Office Location:** HH/417
- **Office Hours:** TBA

Textbook

- **Required:** *Calculus, Early Transcendentals, 8th Edition*, James Stewart, Brooks/Cole. (**Note:** Older editions can be used, as long as you have access to the exercises in the 8th edition.)
- **Optional:**

- Student Solutions Manual for Single Variable Calculus, Early Transcendentals
- Student Solutions Manual for Multivariable Calculus

A copy of the textbook and solutions manual are available on reserve in Thode Library.

Material Covered

- All sections covered in the suggested problems.
- **Major Topics:** Continuity and differentiability, with emphasis on theory (intermediate value theorem, mean value theorem), practice (how to differentiate) and applications (curve sketching, optimization), theory and techniques of integration, with emphasis on practice (how to integrate) and applications. Here are the learning objectives.
- **Approximate Schedule:** Review of Trigonometry, Inverse Functions and Logarithms (3 lectures), Continuity and Derivatives (8 lectures), Applications of Differentiation (10 lectures), Integrals (5 lectures), Applications of Integration (4 lectures), Techniques of Integration (6 lectures)

Assignment Information

- There will be 10 online assignments. See the Important Dates for the due dates.

Test Information

- Only the McMaster standard calculator Casio fx-991 MS or MS Plus is allowed on the tests and exam. No other versions of the Casio fx-991 are allowed.
- Some sample tests and problem samplers are available under 'Content Groups' to the left.
- **Tentative Dates** (subject to change):
  Test #1: Tuesday October 8th
  Test #2: Tuesday November 12th
- Check the Announcements for room and time information, and for instructions on what to do if you have a conflict with the test time.

Course Evaluation

10 Assignments - 2% each
2 Tests - 20% each
Final Exam - 40%

- At the end of the course the grades may be adjusted, but this can only increase your grade and will be done uniformly. We will use the grade equivalence chart published in the Undergraduate Calendar to convert between percentages and letter grades.

- The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

Missed Work Policy

- If you are absent from the university for a minor medical reason, lasting fewer than 3 days, you may report your absence, once per term, without documentation, using the McMaster Student Absence Form. Absences for a longer duration or for other reasons must be reported to your Faculty/Program office, with documentation, and relief from term work may not necessarily be granted. When using the MSAF, report your absence to childsa@mcmaster.ca. Please note that the MSAF may not be used for term work worth 25% or more, nor can it be used for the final examination. For more information look here.

- If your MSAF form was received then the word "note" will appear in place of your mark on the marks page. This will show up within one week after you filled out the MSAF form. If you don't see the word "note" in place of your mark for the missed work one week after filling out the MSAF form, then send an email to Dr. Childs. If you do see the word "note" in place of your mark, then no follow-up is required.

- The percentage for a missed test will be added to your final exam.

- The percentage for a missed assignment will be distributed among your remaining assignments.

Academic Dishonesty

- Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade

of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

- It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf

- The following illustrates only three forms of academic dishonesty:
  1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
  2. Improper collaboration in group work.
  3. Copying or using unauthorized aids in tests and examinations.

Accommodation of Students With Disabilities

- Students with disabilities who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University's Academic Accommodation of Students with Disabilities policy.

RISO Policy

- Students requiring academic accommodation based on religious, indigenous or spiritual observances should follow the procedures set out in the RISO policy. Students requiring a RISO accommodation should submit their request to their Faculty Office normally within 10 working days of the beginning of term in which they anticipate a need for accommodation or to the Registrar's Office prior to their examinations. Students should also contact their instructors as soon as possible to make alternative arrangements for classes, assignments, and tests.

Math 1A03
Calculus I

FALL 2019 Lectures given by Dr. Wolkowicz, Section C01

Instructor:	**Gail Wolkowicz**
Office:	Hamilton Hall, Room 318
Office Hours:	Wednesdays 11:00-12:00 and Fridays 2:00-3:00 or by appointment
Telephone:	(905) 525-9140, Extension 24808
Email:	wolkowic@mcmaster.ca
Home Page:	**http://www.math.mcmaster.ca/wolkowic/wolkowic.html**
Course Home Page:	**childsmath login page**

Lecture Times and Location: Tuesday, Wednesday, and Friday 12:30-1:20 TSH/120

Links to lecture notes given in class will be posted below after each class (usually within 24 hours).

- Lecture 1, Sept 3.

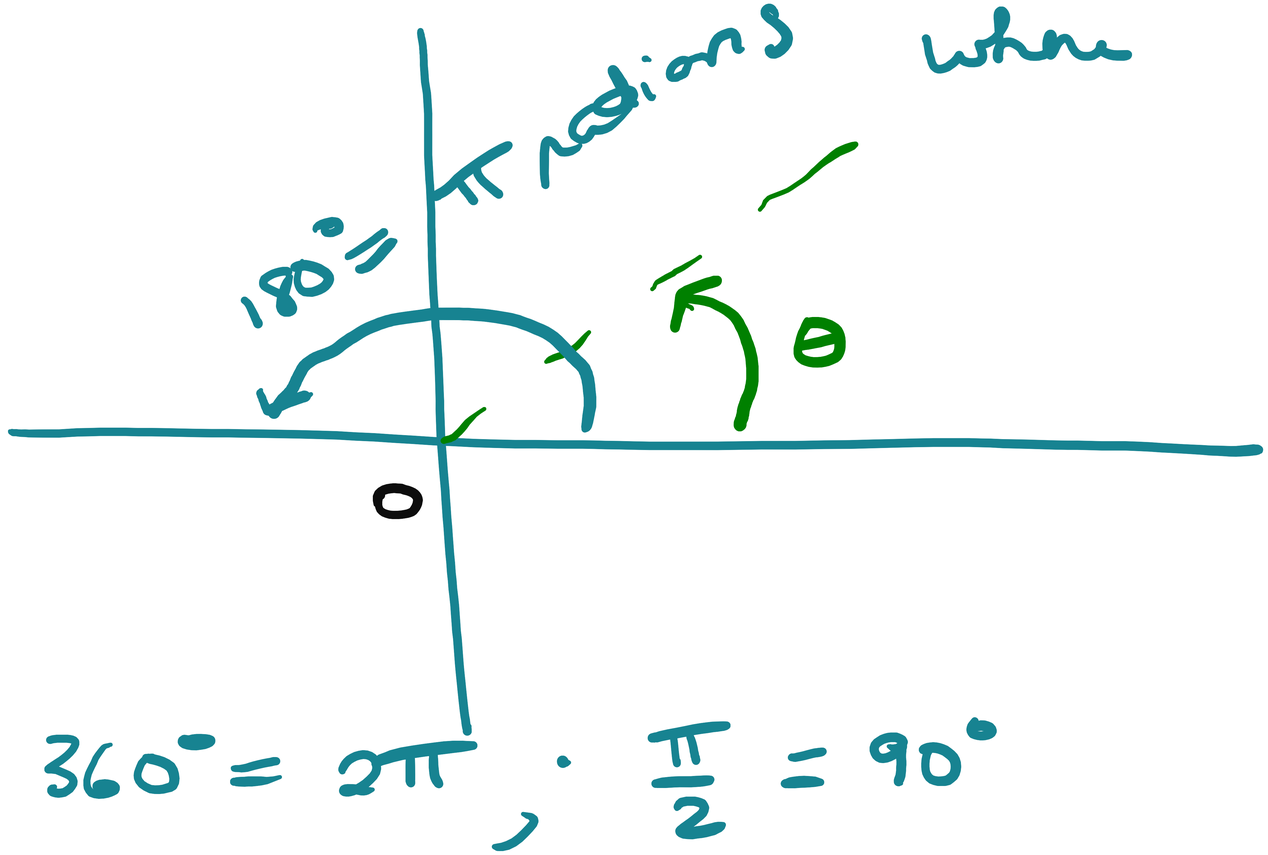
Textbook: Calculus, Early Transcendentals, 8th Edition, James Stewart, Brooks/Cole

To prepare: Besides the **Pre-Calc Review** & **Calculus Warm-Up**
see
page xxiii: To the Student
pages xxvi-xxx: Diagnostic tests

Motivation:
page 1 - 8 A Preview of Calculus
pages 9-54 Sections 1.1-1.4 Background that you are expected to know from High School
pages 77-104 Sections 2.1 - 2.3
We begin with a review of Trigonometry (see Appendix D pages A24-A33.)
& Section 1.5 Inverse Functions and Logarithms

Trig Review (Appendix D)

θ in radians = (θ in degrees) $\times \frac{\pi}{180^\circ}$



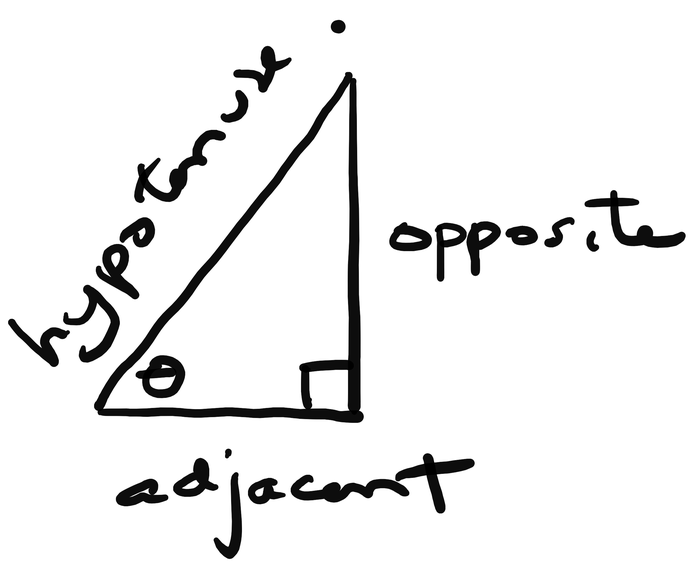
where π rad $= 180^\circ$.

- positive direction is counterclockwise.
- radians are used if not specified.

$360^\circ = 2\pi$, $\frac{\pi}{2} = 90^\circ$

Example: What is 75° in radians?

$$\theta \text{ radians} = 75 \times \frac{\pi}{180} = \frac{5}{12}\pi \approx 0.41\dot{6}\,\pi$$



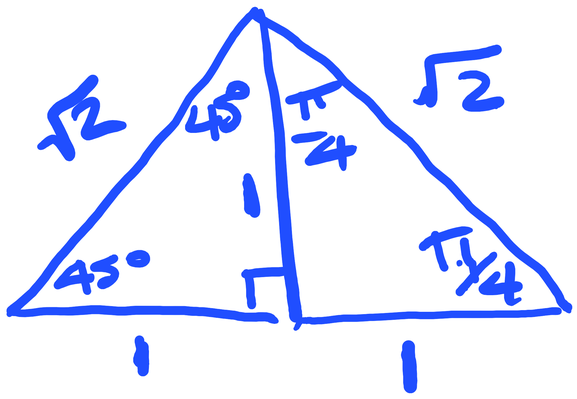
$$\sin\theta = \frac{\text{opp}}{\text{hyp}} \qquad \cos\theta = \frac{\text{adj}}{\text{hyp}}.$$

$$\tan\theta = \text{opp}/\text{adj}.$$

$$\cot\theta = \frac{\text{adj}}{\text{opp}}.$$

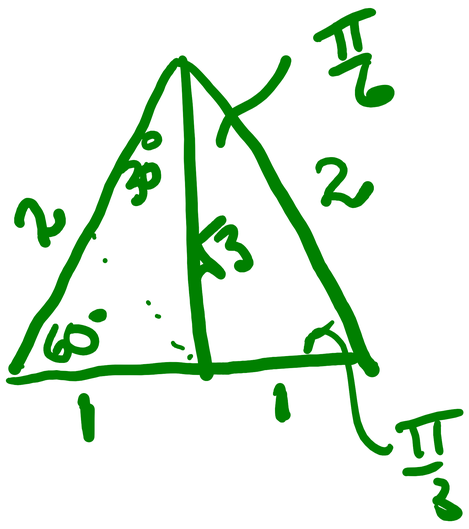
$$\csc\theta = \frac{1}{\sin\theta} = \frac{\text{hyp}}{\text{opp}}.$$

$$\sec\theta = \frac{1}{\cos\theta} = \frac{\text{hyp}}{\text{adj}}.$$



$$\sin(45^\circ) = \sin\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}} = \frac{\sqrt{2}}{2}$$

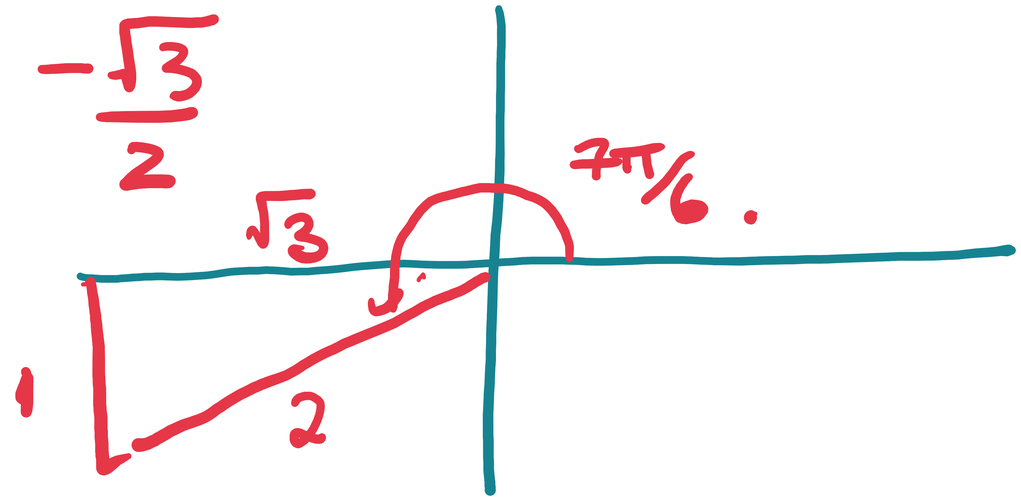
$$\cos(45^\circ) = \cos\left(\frac{\pi}{4}\right) = \frac{1}{\sqrt{2}}.$$



$$\sin(30^\circ) = \sin\left(\frac{\pi}{6}\right) = \frac{1}{2} \qquad \sin(60^\circ) = \frac{\sqrt{3}}{2}.$$

$$\cos(60^\circ) = \cos\left(\frac{\pi}{3}\right) = \frac{1}{2}$$

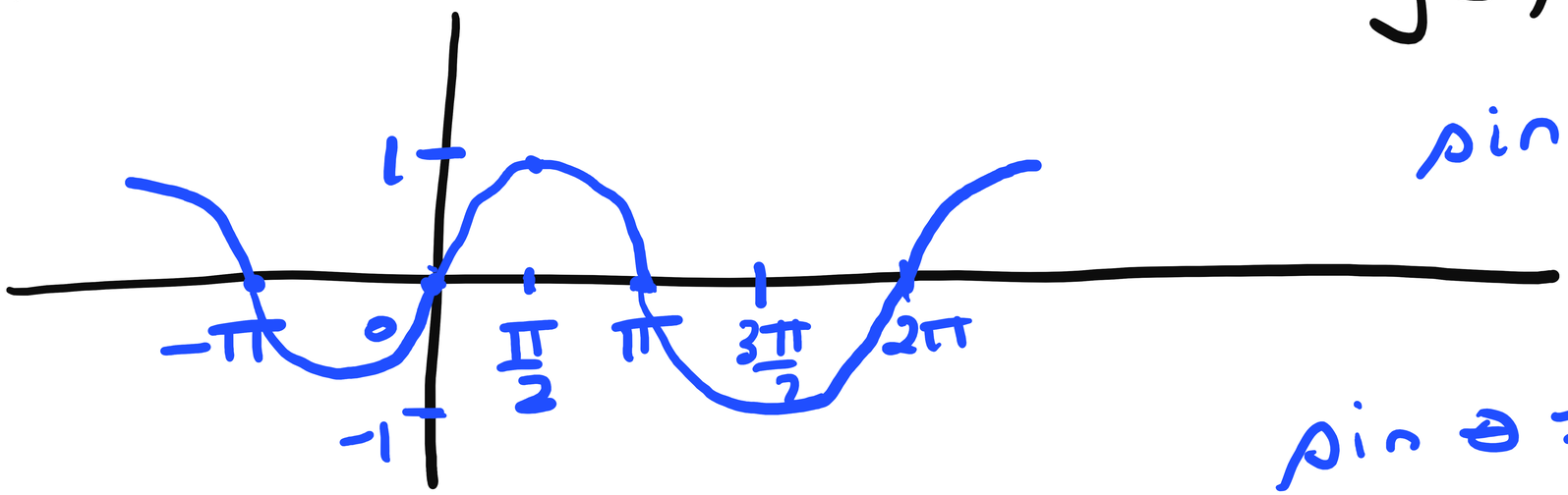
Find $\cos\left(\frac{7\pi}{6}\right) = -\frac{\sqrt{3}}{2}$



Graphs

$y = f(x)$

$y = \sin(x)$



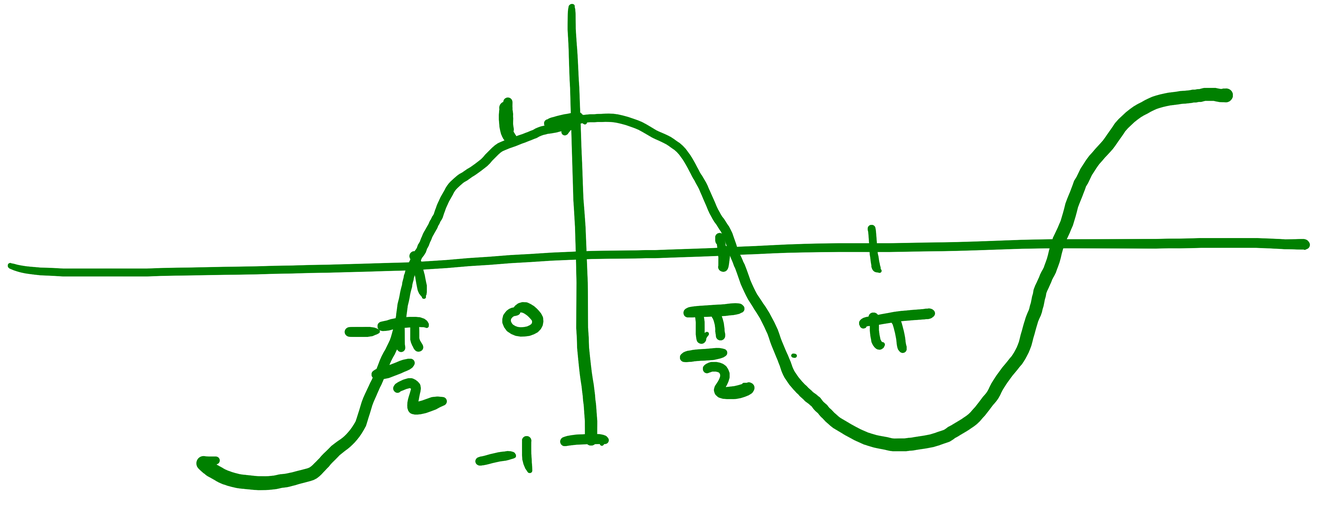
$\sin(x)$ is 2π periodic.

$\sin\theta = 0$ if $k\pi$ k integer.

$\sin(-x) = -\sin(x)$.

If $f(-x) = -f(x)$, we call f an odd function.

$y = \cos(x)$



$\cos(-x) = \cos(x)$

If $f(-x) = f(x)$ we call f an EVEN function.

$\cos(x) = 0$

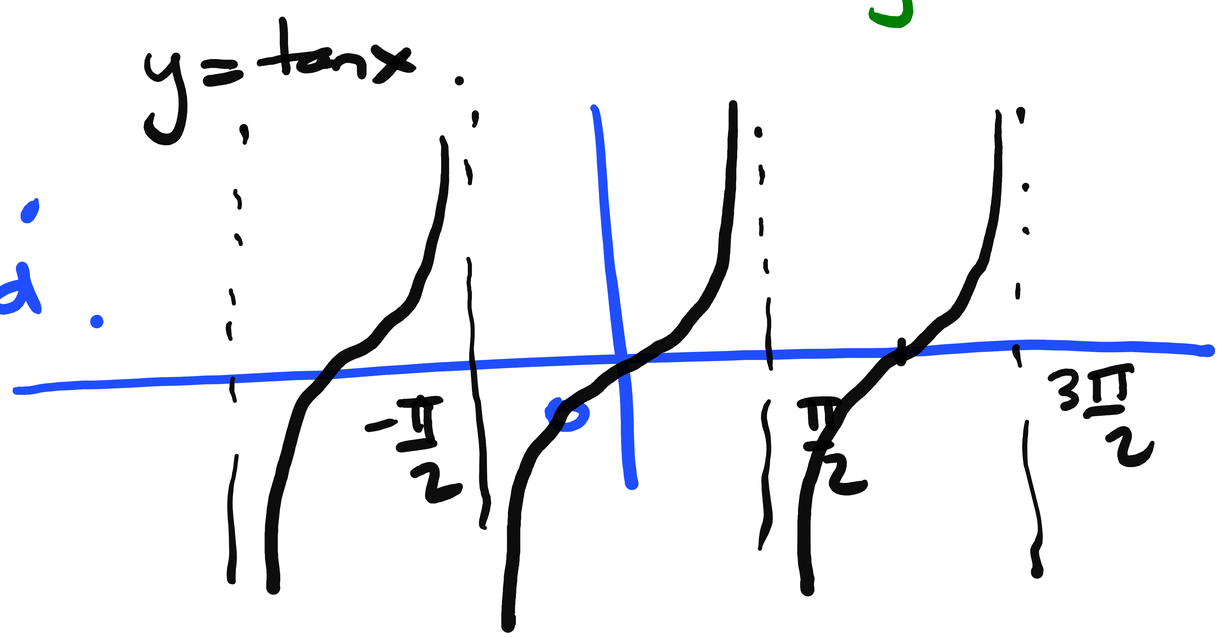
if $x = \frac{2n+1}{2}\pi$

n integer

$\cos(x)$ is 2π periodic.

$y = \tan x$, tan is π periodic.

tan is odd.



Trig identities.

$$\sin^2 x + \cos^2 x = 1 .$$

$$\frac{\sin^2 x}{\cos^2 x} + \frac{\cos^2 x}{\cos^2 x} = \frac{1}{\cos^2 x}$$

$$\tan^2 x + 1 = \sec^2 x$$

$$\sin(a \pm b) = \sin(a)\cos(b) \pm \cos(a)\sin(b)$$

$$\cos(a \pm b) = \cos(a)\cos(b) \mp \sin(a)\sin(b)$$

$\cos(2\theta) =$ HW.

$\sin(2\theta) =$ HW.